

## REMARKS

Claims 1-2, 4, and 5 are pending. Claims 1, 2, 4, and 5 have been amended. Claim 3 has been previously cancelled. New claims 6-9 have been added to further define the invention. No new matter has been introduced. Reexamination and reconsideration of the application is respectfully requested.

In the October 7, 2004 Office Action, the Examiner rejected claims 1, 2, 4, and 5 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The Examiner rejected claims 1 and 2 under 35 U.S.C. §112, first paragraph, as failing to comply with enablement requirement. Applicant has amended claims 1 and 4 to overcome these rejections. The Examiner rejected claims 1, 2, 4, and 5 under 35 U.S.C. §103(a) as being obvious over applicant's admitted prior art (hereinafter the AAPA), in view of Dieterich, U.S. Patent No. 4,398,157 (hereinafter the Dieterich reference). This rejection is respectfully traversed.

### **Amended Independent claim 1 recites:**

An audio apparatus for use in a negative impedance drive of a loudspeaker having an internal impedance to perform a desired amplitude-frequency characteristic, comprising:

an amplifier device that drives the loudspeaker with a driving voltage;

a providing section, that provides a control voltage, **having as an input a voltage level indicative of a driving current to the loudspeaker;** and

a feedback device having a variable feedback gain that performs a positive feedback of a signal corresponding to the driving voltage of the loudspeaker to a positive input terminal of the amplifier device thereby causing the amplifier device to

generate a negative impedance effective to negate the internal impedance of the loudspeaker, the feedback device comprising a voltage-controlled amplifier having the variable feedback gain and receiving the signal corresponding to the driving voltage, the voltage-controlled amplifier being responsive to the control voltage from the providing section and the signal corresponding to the driving voltage for generating an output signal and positively feeding back the output signal to the positive input terminal of the amplifier device to thereby perform the positive feedback, wherein

**the providing section provides the control voltage that decreases the variable feedback gain as the voltage level indicative of the driving current to the loudspeaker increases**, thereby adjusting the amplitude-frequency characteristic of the amplifier device, only if a level of a loudspeaker output exceeds a predetermined output level, and otherwise keeps the variable feedback gain constant as long as the level of the loudspeaker output remains under the predetermined output level.

The Examiner rejected claims 1, 2, 4, and 5 under 35 U.S.C. §103(a) as being obvious over AAPA, in view of the Dieterich reference. In so doing, the Examiner cites the combination of the Dieterich reference to teach the deficiencies of AAPA. Applicant respectfully submits that the AAPA and the Dieterich reference are not combinable under 35 U.S.C. §103(a). It is respectfully submitted that it would not have been obvious to one skilled in the art to combine the teachings of AAPA and the Dieterich reference, as suggested by the Examiner. It is well settled that a reference must provide some motivation or reason for one skilled in the art (working without the benefit of applicant's specification) to make the necessary changes in the disclosed device. The mere fact that a reference may be modified in the direction of the claimed invention

does not make the modification obvious unless the reference expressly or implicitly teaches or suggests the desirability of the modification. In re Kotzab, 55 U.S.P.Q.2d 1313, 1317-18 (Fed. Cir. 2000); In re Fitch, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992); In re Mills, 16 U.S.P.Q.2d 1430, 1432 (Fed. Cir. 1990).

Applicant respectfully submits that one skilled in the art (working without the benefit of applicant's specification) would have had no motivation or reason to combine AAPA which teaches a differential amplifier with a feedback loop input connected to the non-inverting (+) terminal of the differential amplifier, the feedback loop providing "positive feedback", wherein the effect is to associate a negative value with the output resistance of the differential amplifier, so as to compensate for the resistance of the loudspeaker, and the Dieterich reference which teaches an altogether different circuit for an unrelated purpose wherein "the output terminal of amplifier 100 is also coupled via a feedback path to its **inverting input terminal (-)**. The feedback path comprises the signal expander of FIG. 1 wherein terminals 10 and 12 are connected to the amplifier 100 output and inverting input terminals, respectively." (Column 7, lines 18-24). The reference also states "since the expander gain increases with increasing signal level and **the feedback is negative**, the overall closed loop gain of amplifier 100 varies inversely with the input signal level and is thus complementary to the gain vs signal level characteristics of the expander." (Column 7, lines 31-35).

Applicant respectfully submits the Examiner is combining references which are unrelated to each other, and neither of which contains any teaching to be combined with the other. Applicant submits that the Dieterich reference makes no mention of or a desire to associate a negative value with an output resistance of a differential amplifier,

so as to compensate for a resistance of a loudspeaker.

Other than the Applicant's specification, Applicant knows of no operative combination showing a positive feedback circuit to associate a negative value with an output resistance of a differential amplifier, so as to compensate for a resistance of a loudspeaker that utilizes a providing section to provide a control voltage to a feedback device having a variable feedback gain.

The AAPA and the Dieterich reference do not disclose, teach, or suggest the audio apparatus specified in independent claim 1, as amended. Unlike the audio apparatus specified in independent claim 1, as amended, the AAPA and the Dieterich reference do not show "a providing section, that provides a control voltage, **having as an input a voltage level indicative of a driving current to the loudspeaker**" and "**the providing section provides the control voltage that decreases the variable feedback gain as the voltage level indicative of the driving current to the loudspeaker increases**".

The AAPA makes no mention whatsoever of a providing section.

The Dieterich reference teaches the use of "**negative feedback**" wherein the output terminal of amplifier 100 is coupled via a feedback path to its **inverting input terminal (-)**. The feedback path comprises the signal expander. The Dieterich reference does not teach "a feedback device having a variable feedback gain that performs **a positive feedback** of a signal corresponding to the driving voltage of the loudspeaker to **a positive input terminal** of the amplifier device thereby causing the amplifier device to generate a negative impedance effective to negate the internal impedance of the loudspeaker" and "a providing section, that provides a control voltage,

**having as an input a voltage level indicative of a driving current to the loudspeaker”.**

Accordingly, the Applicant respectfully submits that independent claim 1, as amended, distinguishes over the above-cited references. Claims 2, 6, and 7 depend directly from independent claim 1, as amended. Therefore, Applicant respectfully submits that claims 2, 6, and 7 distinguish over the above-cited references for the same reasons as set forth above with respect to independent claim 1, as amended.

Independent claim 4, as amended, recites limitations similar to independent claim 1, as amended. Accordingly, Applicant respectfully submits that independent claim 4, as amended, distinguishes over the above-cited references for the same reasons as set forth above with respect to independent claim 1, as amended.

Claims 5, 8, and 9 depend directly from independent claim 4, as amended. Therefore, Applicant respectfully submits that claims 5, 8, and 9 distinguish over the above-cited references for the same reasons as set forth above with respect to independent claim 4, as amended.

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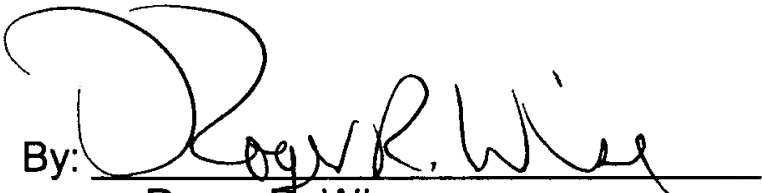
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Applicant believes that the foregoing amendment and remarks place the application in condition for allowance, and a favorable action is respectfully requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance should the examiner believe that such a telephone conference would advance prosecution of the application.

Respectfully submitted,

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